Contribution ID: **83** Type: **Invited talk**

Recent Reaction Dynamics Studies with light RIBs at Coulomb Barrier Energies

Monday, 8 June 2015 14:30 (30 minutes)

Light exotic nuclei often exhibit very unusual features, such as, for instance, halo structure (i.e., a matter distribution characterized by a core surrounded by a halo of rarified nuclear matter) and neutron skin structure (i.e., a thick concentration of neutrons in the region around the nuclear surface). Moreover, light Radioactive Ion Beams (RIBs) are generally very weakly-bound with breakup thresholds smaller than 1.0 MeV and well pronounced cluster structures even in the ground state. All these phenomena are strongly correlated with each other and sometimes generate conflicting effects. It is nowadays rather well established that, at Coulomb barrier energies, breakup related effects increase the total reaction cross section. The quest(ion) has now moved towards investigating what reaction mechanisms are mainly responsible for the enhancement of the reaction probability. An overview of the recent results obtained at Notre Dame (USA) for the proton-halo 8B (Sp = 0.1375 MeV), at GANIL (France) for the neutron skin nucleus 8He (S2n = 2.140 MeV) and at TRIUMF (Canada) for the two-neutron halo 11Li (S2n = 0.30) will be given.

Within this framework, we developed at INFN-LNL (Italy) a small facility, named EXOTIC, for the in-flight production of light RIBs. The production scheme employs inverse-kinematics reactions induced by heavy-ion beams delivered by the LNL-XTU tandem accelerator on a light gas target. So far, secondary beams of 7Be, 8Li, 8B, 15O and 17F in the energy range 2-6 MeV/u have been produced. An overview of the most recent achievements in the study of 7Be(S4He = 1.584 MeV)-induced reaction dynamics on medium-mass (58Ni) and heavy (208Pb) targets will be presented.

Primary author: Dr MAZZOCCO, Marco (University of Padova and INFN - Sezione di Padova)

Presenter: Dr MAZZOCCO, Marco (University of Padova and INFN - Sezione di Padova)

Session Classification: Reactions with radioactive beams

Track Classification: Reactions with radioactive beams